JACO Designs

DERRINGER PISTOL

.22 CALIBER SINGLE SHOT

This pamphlet contains the plans and step by step instructions necessary to construct the Derringer pistol. This pistol breaks open to load and clean and is latched rigidly closed with a spring loaded cross bar mechanism. Empty cases automatically extract when the gun is opened and the hammer is automatically put in the half cock position. This is accomplished by a simple caming action between the extractor and hammer. The hammer is driven by a coil type compression spring implemented to produce extremely light sear forces in the full cock position. This allows the use of soft steel in the hammer and trigger. The barrel block is made from 1/2 inch thick cold rolled steel filed in a octagonal shape and the bore is made using a rifled liner. The gun may be blued for a beautiful and rugged finish. JACO offers a hot bluing technique that is comparable in appearance and durability to those on factory made guns. The plans show the position and function of all parts. Separate details are drawn for each part. These can be cut out or traced and pasted on the steel stock to assist in cutting the parts. Before starting however it would be wise to read all the instructions and learn as much as possible about the gun you are going to build. This design has been refined by building and testing and is simple to build. If you build as instructed, you will have a completely satisfactory pistol. Because we have no control over the materials you use, the workmanship or possible use of the pistol, JACO will not assume any responsibility for the pistol you build. Most of the material required is cold rolled steel (CRS). The only tools needed are a hacksaw, drill press and a bench vise. Additional tools will make the work go easier and faster but are not essential. You may alter the design to suit your own preference in some areas like a longer barrel or a thicker handle. These innovations add to the pleasure of building your own gun. The builder however is cautioned against changing the interior mechanism without thorough study since this is a proven design. These plans and instructions may not be copied in whole or in part without written consent of JACO Designs.

1 - MATERIAL - The following is a list of the parts and the material they are made from. Barrel (2), 1/2 inch thick - Trigger (8) and Hammer (17), 1/4 inch CRS - Extractor (7) and Breech Block (15), 1/8 inch CRS - Hammer Spring Rest (14), Handle (16) and Base Plate (20), 1/8 inch by 1/2 inch CRS - Hammer Spring Guide (3), Trigger Guard (5) and Side Plates (19) and (21), 1/16 inch CRS.

2 - ROUGH PARTS - Lay out all the parts on the steel and saw them out leaving approximately 1/64 inch of stock all around. The side plates should be clamped and filed together. Critical dimensions such as at trigger sear, hammer sear notches, latch and extractor should be left oversize and finished at assembly.

3 - FRAME - The bending of the frame can best be accomplished by making a simple bending fixture. An effective fixture is made by clamping two large bolts in a vise with about 1/4 inch space between. The frame is bent by inserting the 1/8 x 1/2 strip between the bolts and applying force as necessary. Continually check your progress by comparing with the pattern. Cut out the hammer slot and file the notches for the hammer spring rest. File the notch and taper the Base Plate (20) as indicated.

4- ASSEMBLE FRAME - Mark the location of four rivet holes in the base plate, two rivet holes in the handle and one rivet hole in the breech block and center punch. Drill each hole through with a 1/16 inch dia. drill. Use 1/16 inch dia. rivets (16 gauge nails) and trim to 11/16 inch long. Locate base plate (20) on one side plate (21) in the position indicated and clamp. Using the 1/16 inch dia. rivet hole as a guide, drill through the side plate with a 1/16 dia. drill. Insert a rivet to maintain this location and proceed to drill the remaining three holes in like manner. Butt the handle against the base plate and clamp to side plate. Drill and pin with rivets as before. Trim breech block so that it has a dimension of 0.500 inch across the width where it fits between the side plates, insert into notch and push down to bottom, clamp, drill and insert rivet. Repeat process for the other side plate. Mark plates so that they can be reassembled as drilled and disassemble. Use a No. 50 drill to enlarge the rivet holes on the outside of the side plates to a depth of 1/32 inch. Reassemble frame and insert rivets. Place frame in a smooth jawed vise so that one rivet can be crushed at a time. Carefully tighten the jaws until the rivet is fully upset into the enlarged holes. Proceed in like manner until all seven have been upset. File the heads down even with the side plate surface.

5 - BARREL - Cover the entire barrel with a red felt tip marking pen and center punch center of bore. Clamp barrel to a square piece of stock in a vertical position and using a 3/16 inch drill with a shank longer than the barrel,drill the barrel through from the breech end. The drill should be started square and frequently cleared of chips to assure a straight hole. The hole should then be enlarged to the size required to fit the rifled liner you purchase. The liners can be obtained from many gun supply houses and are approximately 5/16 inch in diameter. Center punch the location of the extractor pin and drill with a 1/16 inch dia. drill. A 1/16 diameter pin 1/2 inch long, will be used for the Extractor Hinge Pin (22). Locate and drill a 3/16 inch dia. hole through the top of the barrel block for the front sight. Scribe lines 1/8 inch from each edge the length of the octagonal chamfers.

File 45 degree chamfers as indicated. Draw file to obtain perfectly flat surfaces. Finish chamfer runouts with a smooth round file.

6 - RIFLED LINER - The Rifled Liner (1) should slip easily into the barrel. Use epoxy cement or soft solder to secure liner to barrel. After epoxy cures, file excess liner square with barrel. Make Front Sight (18) by cutting 3/16 inch long piece from 3/16 inch dia. CRS rod. Epoxy in indicated position. Preshape sight leaving excess stock on sides and top. Layout location of extractor notch, saw and file notch 1/8 inch wide.

7 - EXTRACTOR - Center punch location of hole in Extractor (7) and drill with a 1/16 inch drill. File extractor to final shape except where it will be chambered and assembled in barrel. Care should be taken so that extractor fits the barrel perfectly in the chamber.

8 - CHAMBERING - Use a No. 2 drill and drill the breech end of the barrel with extractor in position 0.77 inch deep. Enlarge hole with a No. 1 drill to same depth. With a 9/32 inch drill, drill to a depth of 0.040 inch. Polish the chamber with emery cloth on a wooden rod.

9 - LATCH - Locate, center punch and drill frame with 1/8 inch drill for hinge pin hole through both walls. Slide barrel into frame so that breech is against breech block and properly positioned. Clamp and drill hinge pin hole through barrel with 3/16 inch drill. Make Hinge Pin (9) and insert in latch pin hole. Drill the latch pin hole in the same manner, through the assembled barrel and frame. Disassemble and complete the latch pin slot by sawing and filing the barrel block. Complete the latch work on the frame as indicated on the side plates. Before approaching final size, assemble gun and check latch fit. Latch should hold gun tightly closed without shake between barrel and frame. Make Hinge Pin Key (10), Latch Spring (11), Latch Bar Key (12) and Latch Bar (13) as indicated. The Latch Spring (11) is made by winding 21 coils of 0.025 inch dia. music wire on a 0.112 inch dia. slotted mandrel. Mandrel can be made from a large nail. Be sure to allow extra turns for some spring back. Trim and grind ends square. Stretch, then compress the spring to solid height. The spring back will provide the right preload for the latch.

Drill a 3/16 inch dia. longitudinal latch hole in barrel and assemble latch parts. Assemble barrel to frame and check function for smooth operation. The extractor should limit the barrel opening by striking the bottom of the breech block.

10 - HAMMER - Drill 1/8 inch dia. hole in Hammer (17) for the hammer pin at the indicated location. Place hammer in its proper position in the frame making sure that the front face of the hammer is flat against the breech block. Note the location and place hammer on the outside of frame in the exact position as it was inside the gun and clamp. Use a 1/8 inch drill and carefully drill through both sides of the frame. Make Hammer Pin (24) and assemble hammer.

11 - TRIGGER - Drill 1/8 inch dia. hole in Trigger (8) for trigger pin at indicated location. Place trigger in its proper location inside frame and check that the sear and half cock notches have enough stock and can be filed to fit. Note the location, place trigger on outside of frame in the exact position as it was inside frame and clamp. Use 1/8 inch drill and carefully drill through both walls of the frame. Make Trigger Pin (23) and assemble trigger.

12 - TRIGGER AND HAMMER OPERATION - Draw hammer back to the full cock position and note relative location of sear and sear notch. Carefully file sear and notch so that they will engage. File the half cock notch in the hammer so that when engaged with the sear, the hammer will be held off the breech block by about 1/16 inch. The slope on the hammer half cock driver cam and the extractor finger should be filed so that the hammer is automatically put into the half cock position when the gun is opened.

13 - FIRING PIN - With hammer in down position, the hammer face is marked through the barrel establishing the center of the bore on the hammer face. Marking is best accomplished by using a red felt tip marking pen to color the hammer face and using a pointed rod (nail) 1/16 inch in diameter. Remove hammer, measure up from the marked center 3/32 inch, center punch and drill firing pin hole with 1/8 inch drill to a depth of 3/16 inch. Make the firing pin from 1/8 inch dia. rod,5/16 inch long. Epoxy firing pin in hole in hammer face and shape the point so that it will print a vertical mark about 1/16 inch long by 1/32 inch wide on a fired case. File length so that case will be printed to a depth of about 0.025 inch.

14 - HAMMER SPRING - Drill Hammer Spring Rest (14) guide hole with 1/8 inch dia. drill. Drill 1/16 dia. for Locating Pin (**26**). Make locating pin from 1/16 inch dia. CRS rod, 3/4 inch long and epoxy into hammer spring rest. Wind Hammer Spring (4) using same procedure as before. Make 25 coils from 0.045 inch dia. music wire on a slotted mandrel 0.192 inch dia. Stretch and compress spring as before. With Hammer Spring Guide (3) assemble above items into handle of pistol as indicated. Test action by dry firing.

15 - TRIGGER GUARD - Bend Trigger Guard (5) to the indicated shape and trim for length. Rivet in the indicated position using the technique previously described.

16 - TRIGGER SPRING - Trigger Spring (6) is made from 0.025 inch dia. music wire, 3/4 inch long. Use a No. 60 drill and drill a hole in the back side of the trigger as indicated. Insert trigger spring and stake in location by center punching. Bend spring back slightly to increase trigger pull force.

17 - GRIPS - The grips are best made from walnut wood. Handles are fitted to the gun and then shaped. It is important that the wood fits the Vee notch in the side plates. Mark the position of the locating pin and drill 1/16 inch dia. hole deep enough in each handle to accommodate the locating pin. Install the wood handles using a flat head wood screw modified as indicated. The screw should be inserted from the right side of the gun. The right handle should be counter bored to recess the screw head. Handles should be finished with two coats of clear varnish with a light sanding between coats.

18 - STAMP - Using 1/16 inch hand stamp letters and numbers, stamp your name, city and state and ".22 CAL." as indicated.

19 - FINISH - Finish file the gun with a smooth file all over first with the gun assembled to establish the proper "blend-in" of surfaces, then disassemble to reach all surfaces. Remove all surface roughness that would marr the appearance of the finished gun. In finishing, it should be remembered that a gun traditionally has square corners that are broken slightly to eliminate sharpness. Excess rounding of edges is not accepted gun practice.

It is not wise to try to produce a mirror like surface. It will be difficult to achieve all over and also the gun will be subject to scratches in service. Wire brushing after smooth filing makes a good servicable surface for a blued gun to be used in the field.

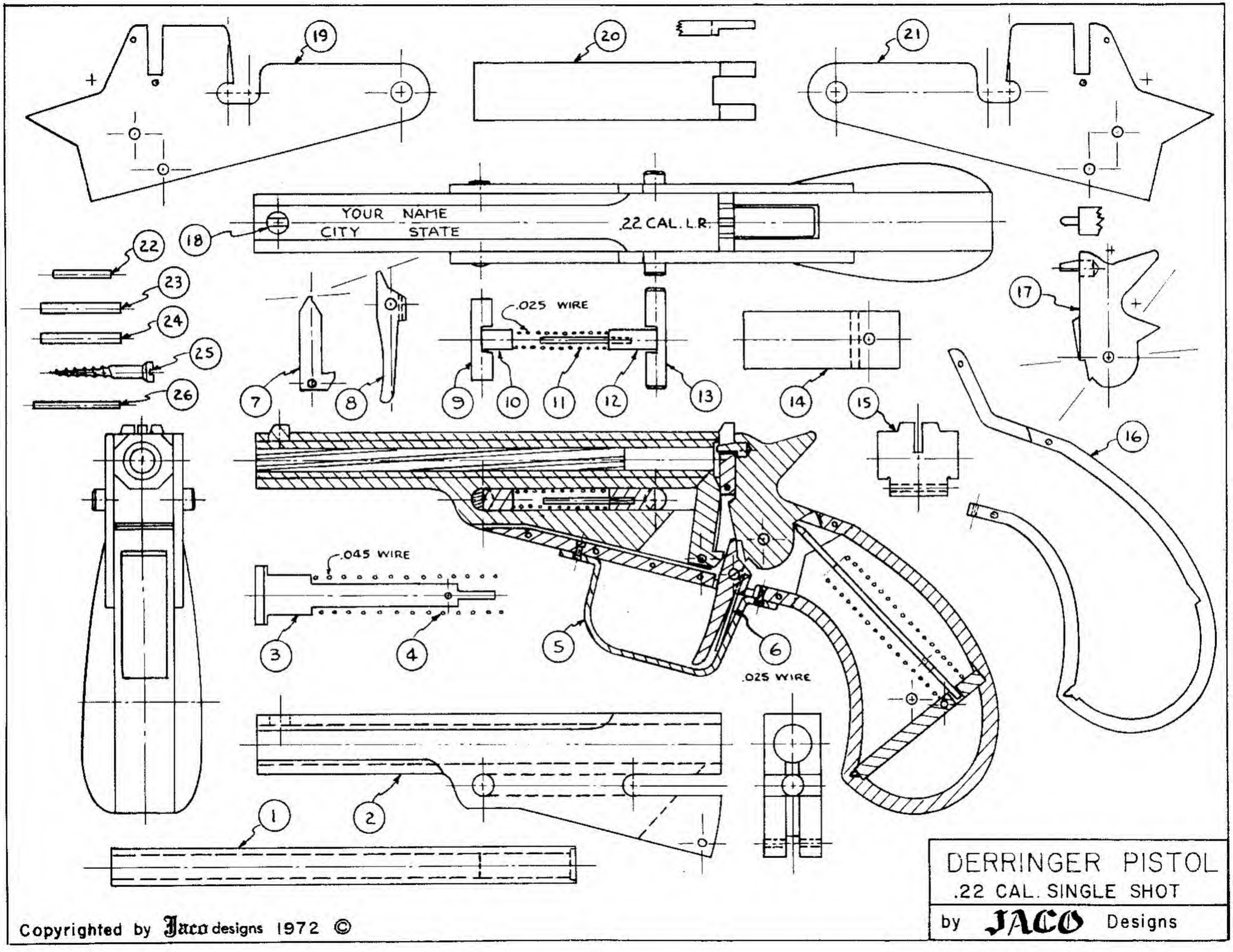
Check gun for correct operation of latch extractor, hammer and trigger using fired cases. Clean gun thoroughly with solvent and oil with gun oil.

20 - TEST FIRE - Load and fire gun. Should the gun not fire, the firing pin is probably not striking the case with sufficient force, in the right location or with too large a mark. Compare your mark with that made from a factory made gun, then make alterations and try again until successful.

21 - SIGHT IN - Set up a target at 50 ft. and fire a 5 shot group. At this range it is necessary to remove 0.014 inch from the side of the front sight for every inch to be moved on the target. If gun shoots to the left, remove stock from the right side of the front sight. If the gun shoots low, remove stock from the top of the front sight. If the gun shoots high ,remove stock from the top of the rear sight. The final thickness of the front sight should be approximately 1/16 inch.

22 - BLUEING - The gun should be cleaned of grease by washing in laquer thinner. The gun can be blued with any of the cold bluing products but these tend to produce a superficial coating that is not very durable. JACO has developed a hot bluing solution that can be accomplished on the kitchen stove and provides good a surface that can be obtained commercially. See JACO brochure for ordering instructions.

23 - CASE - Select a good piece of white pine 1 x 5 x 16 inches long. Cut in half to form box and lid. Half the gun will fit in the box and half in the lid. Cut the entire outline 1/4 inch deep in box and lid and remove all wood between with hand chisel. Remove wood 5/16 inch deep in all but barrel area and finally remove wood 5/8 inch deep in handle area. Sand and clear varnish box. Select felt material of desired color and glue down inside box. Complete with installation of small brass box hinges and latch.



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